

PATENT COOPERATION TREATY

PCT/EP2003/012466



PCT

 INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
 (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 31887P WO	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/EP2003/012466	International filing date (day/month/year) 07 November 2003 (07.11.2003)	Priority date (day/month/year) 09 November 2002 (09.11.2002)	
International Patent Classification (IPC) or national classification and IPC A23L 1/221		CORRECTED VERSION	
Applicant DEGUSSA AG			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.	
3. This report is also accompanied by ANNEXES, comprising:	
a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:	
<input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).	
<input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.	
b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4. This report contains indications relating to the following items:	
<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 19 April 2004 (19.04.2004)	Date of completion of this report 16 March 2005 (16.03.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2003/012466

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ The international application as originally filed/furnished

☒ the description:

pages _____ 1-12 _____, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages _____ 1-15 _____, as originally filed/furnished

pages* _____, as amended (together with any statement) under Article 19

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the drawings:

pages _____, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/12466

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims		YES
	Claims	1-15	NO
Inventive step (IS)	Claims	(Claims can be acknowledged as inventive only if novelty is established.)	YES
	Claims	1-15	NO
Industrial applicability (IA)	Claims	1-15	YES
	Claims		NO

2. Citations and explanations

1. This report makes reference to the following document(s):

- D1: FR-A-2 505 868 (RHONE POULENC SA) 19 November 1982 (1982-11-19)
- D2: US-A-4 749 522 (KAMAREI AHMAD R) 7 June 1988 (1988-06-07)
- D3: PT 101 590 B (INST DE BIOLOG EX E TECNOLOGIC; JOSE MARIA DA FONSECA SUCESSOR (PT) 30 April 1996 (1996-04-30)
- D4: US-A-5 855 786 (SCHNEIDER MICHAEL ET AL) 5 January 1999 (1999-01-05)
- D5: DATABASE WPI Section Ch, Week 198625 Derwent Publications Ltd., London, GB; Class D13, AN 1986-157844 XP002271321 & JP 61 088853 A (SUNTORY LTD) 7 May 1986 (1986-05-07)
- D5a: PATENT ABSTRACTS OF JAPAN (1986) of JP 61 088853 A
- D6: EP-A-0 041 723 (STUDIENGESELLSCHAFT KOHLE MBH) 16 December 1981 (1981-12-16)
- D7: DATABASE WPI Section Ch, Week 199522 Derwent Publications Ltd., London, GB; Class D13, AN 1995-166484 XP002271322 & JP 07 088303 A (LION CORP) 4 April 1995 (1995-04-04)
- D8: EP-A-0 639 551 (HUELS CHEMISCHE WERKE AG) 22

February 1995 (1995-02-22)

- D9: WO 01/28650 A (LAVIPHARM S A LAB; PERRUT MICHEL (FR); LAIMAY FRANCOIS (FR); DESCH) 26 April 2001 (2001-04-26)
- D10: DATABASE WPI Section Ch, Week 199234 Derwent Publications Ltd., London, GB; Class D16, AN 1992-281403 XP002271323 & JP 04 193304 A (KISO KASEI SANGYO KK) 13 July 1992 (1992-07-13)
- D11: US-A-4 560 513 (COENEN HUBERT ET AL) 24 December 1985 (1985-12-24)
- D12: EP-A-0 786 513 (SHIMADZU CORP) 30 July 1997 (1997-07-30)
- D13: PATENT ABSTRACTS OF JAPAN, Vol. 1999, No. 05, 31 May 1999 (1999-05-31) & JP 11 033087 A (SHIMADZU CORP), 9 February 1999 (1999-02-09).

D5a is attached to this report, and relevant passages are cited as in the search report.

2. The present application relates to a method for selectively separating volatile flavoring agents from a single-phase liquid or semiliquid starting material with a low fat and/or oil content by means of compressed C2-C4 hydrocarbons. The gases used are supercritical and subcritical.

- 2.1 In view of the applicant's response, the Examining Authority wishes to make the following general comments in the interest of the clarity of the application:

Flavoring agents are volatile compounds which, therefore, can be perceived by the olfactory receptors. The term "flavoring agent" is neutral, since a compound can form part of a typical scent quality or cause an undesired off-flavor. Low

alcohols such as ethanol (with an olfactory threshold in water, 20°C, 100 mg/l) or acetaldehyde (with a pungently fruity smell) are therefore also flavoring agents. Higher alcohols such as octanols, for example, are known for their fungal, fresh, or cheesy smell, and decanol is known as a volatile flavoring agent in ultra-heat treated milk. Reference is made to the multifarious documents accessible to a person skilled in the art.

Claim 1 contains the feature that the process is carried out using compressed hydrocarbons. The state of the starting material remains undefined.

2.2 Novelty (PCT Article 33(2))

With respect to the independent claim and also the majority of the dependent claims, the claimed method is anticipated by the following cited prior art documents (for the anticipated claims and important passages, see the search report documents).

Therefore, the requirements of PCT Article 33(2) have not been met.

D1 describes the separation of ethanol (see point 2.1) and other flavoring agents from alcoholic beverages. The other flavoring agents are then fed back into the beverage. Supercritical CO₂ is preferable, but hydrocarbons can also be used. The pressure range and temperature ranges indicated correspond to those of the application (page 4, line 12 to page 6, line 23; claims 1, 3 and 6).

D4 discloses the extraction of oils and flavoring agents from aqueous or alcoholic plant extracts by means of high-pressure spray extraction, wherein

compressed gases, including propane or butane, are used (column 1, lines 7-13; column 2, lines 41-42). Since the extracts are sprayed, it is assumed that they are liquids without a solid component, and furthermore, because of the solubilities, only a limited quantity of fat or oil would be present in an aqueous extract, if at all. Therefore, the subject matter of the application is (implicitly) anticipated.

D5 (see in conjunction with D5a) describes the selective extraction of flavor components from beverages such as tea or coffee by means of a supercritical or subcritical gas (CO₂, ethylene, ethane, or propane, *inter alia*). An entrainer such as ethanol can be added to the gas. Tea and coffee each contain less than 20% lipophiles and are single-phase. Therefore, D5 also anticipates the subject matter of dependent claims 5 and 11.

D8 describes the removal of higher alcohols (C8-C20) from reaction mixtures by means of supercritical ethane (claims 1, 2, 3 and 4). C8 (which is specifically disclosed) is regarded as a flavor component (see point 2.1).

D10 discloses the purification of synthetic alcohol or fermentation alcohol by means of compressed (pseudo-supercritical) C2-C4 hydrocarbons (propane, propylene, butane, isobutane). The alcohol is enriched together with off-flavors such as methanol, acetic acid, acetaldehyde, propanol (see point 2.1) in the solvent. The off-flavors are separated from the alcohol in later steps.

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3. A favorable international preliminary examination report can be established only for dependent claims that relate to independent claims which, *per se*, already meet the PCT requirements.

The conditions indicated in the examples in the application appear to reflect the invention best. The conditions used therein and the results achieved appear to be neither disclosed in nor derivable from the prior art.

4. The subject matter of the application meets the requirements of PCT Article 33(4).